Technical Update of the Caloosahatchee Estuary Water Reservation

Water Resources Advisory Commission
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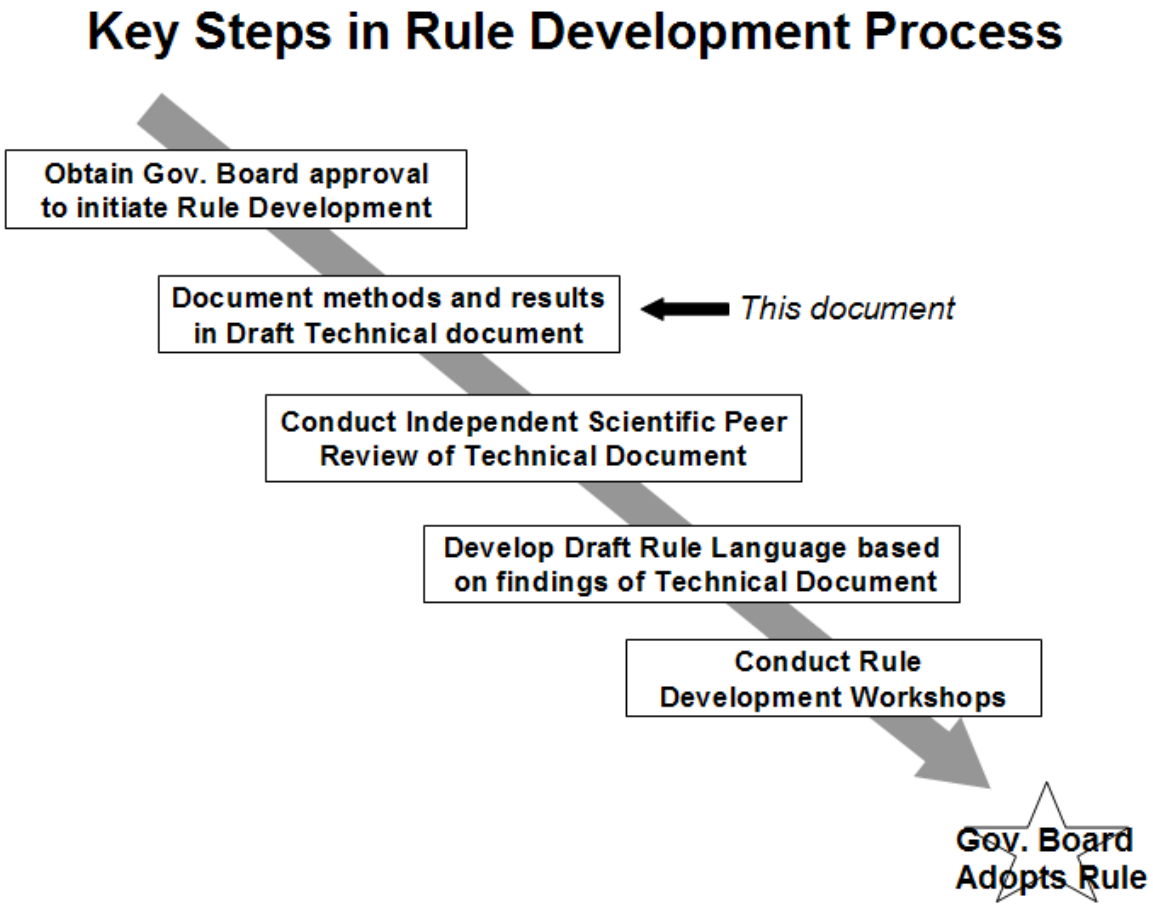
Water Reservation for the Caloosahatchee Estuary

- A water reservation will prevent consumptive use of water needed for the protection of fish and wildlife in the Caloosahatchee Estuary

Steps to Develop Water Reservation



Caloosahatchee Estuary

Hydrologic Issues

- Caloosahatchee Estuary experiences widely fluctuating salinity gradients due to variable freshwater inflows
  - Too much freshwater in the wet season causes adverse impacts to downstream marine organisms
  - Lack of freshwater in the dry season allows intrusion of saltwater, adversely impacting brackish water organisms in the upper estuary

Caloosahatchee Estuary (Cont.)

Hydrologic Issues

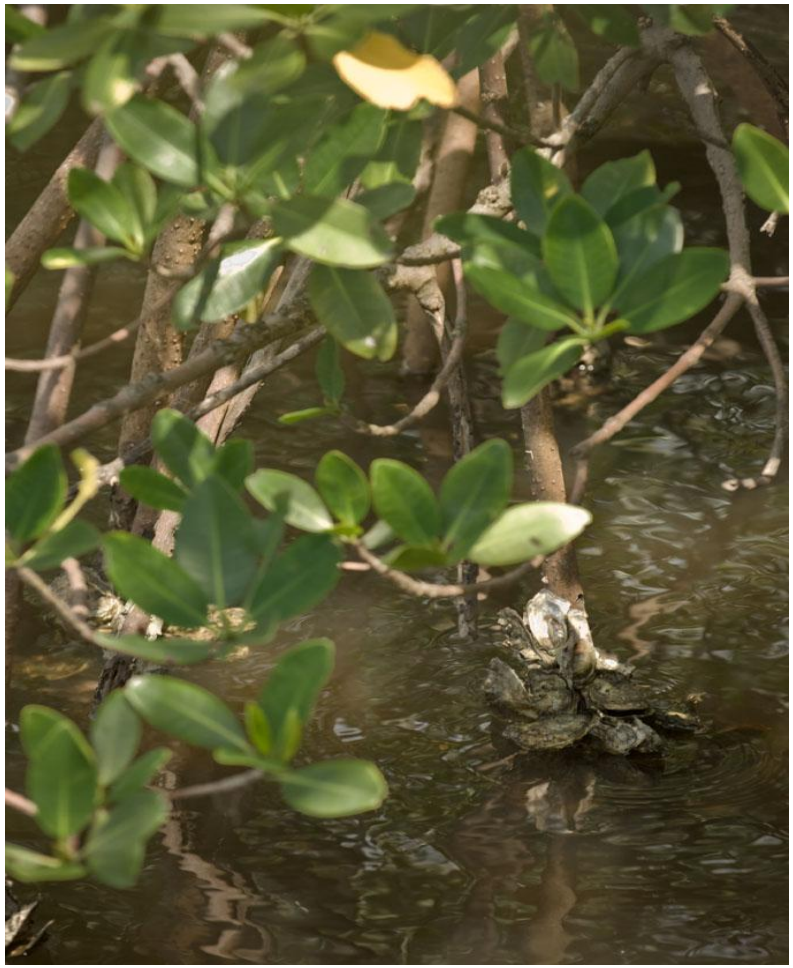
- Caloosahatchee River (C-43) West Basin Storage Reservoir Project Phase 1 Project Implementation Report (PIR) purpose:
  - Improve the salinity balance in estuary
  - Attenuate peak flows during the wet season
  - Provide flows to prevent significant harm during the dry season

Technical Approach to Support Water Reservation

- Prepare Draft Technical Report
- Conduct Scientific Peer Review
  - Determine if the proposed linkage between hydrology and water for fish and wildlife is scientifically sound
  - Based upon best available information
  - All data, methods, assumptions and models subject to review

Technical Approach to Support Water Reservation (Cont.)

- Identify available sources of inflows which contribute to the protection of fish and wildlife
- Sources include
  - The CERP project and existing flows from the basin
  - Timing and distribution



Overview of Caloosahatchee Watershed

Disclaimer:
The South Florida Water Management District does not warrant, guarantee, or make any representations regarding the use of the information on this map.

Key Steps to Identify Water for the Protection of Fish and Wildlife

1. Identify areas and habitats sensitive to sources of water

2. Identify fish and wildlife resources to be protected

3. Identify performance measures and link to flow target

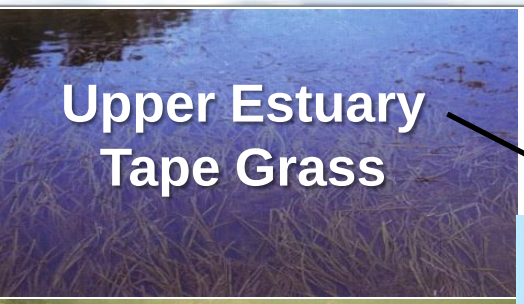
4. Quantify timing and distribution of water that contribute to meeting flow target

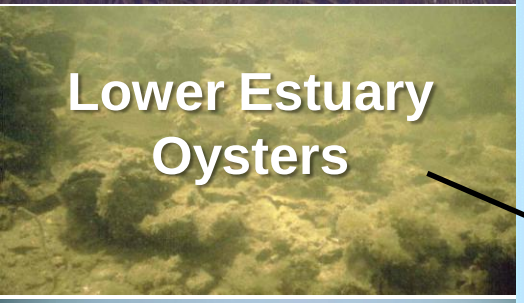
5. Identify quantity of water to be reserved to protect fish and wildlife

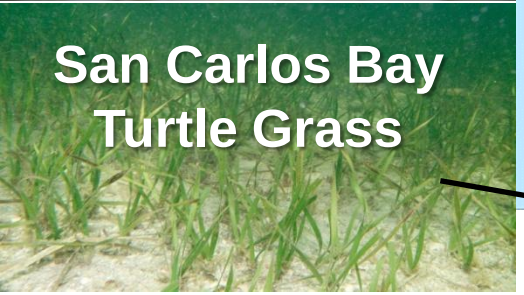
Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

1. Identify areas and habitat sensitive to sources of water
   - **Upper Estuary**: Low Salinity Zone and Tape Grass
   - **Lower Estuary**: Oyster Reefs and Marine Seagrasses
   - **Outer Estuary**: Marine Seagrasses

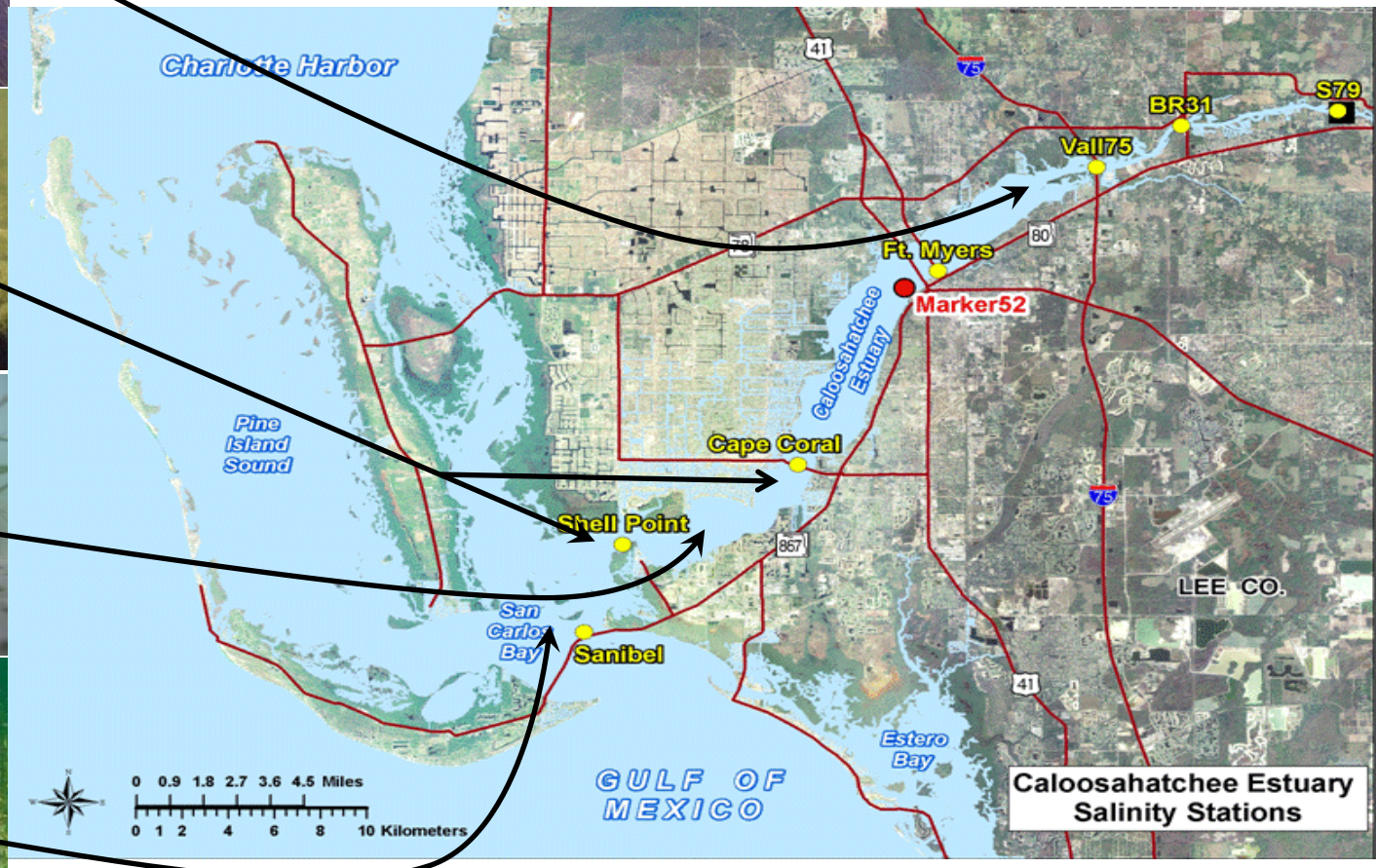
Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)







Step 1: Identify habitat and areas sensitive to sources of water

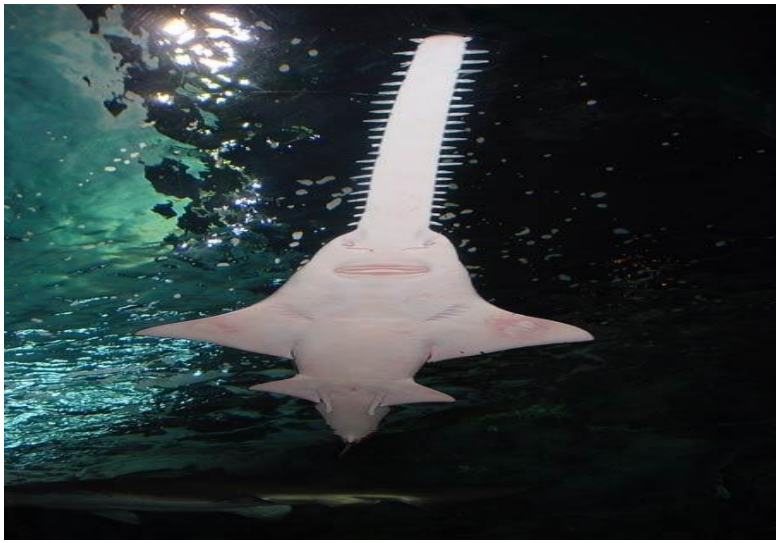


Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

2. Identify fish and wildlife resources to be protected
   - Upper Estuary
     - Tape grass
     - Early life stages of fish
   - Lower Estuary
     - Oysters and Seagrass
   - Outer Estuary
     - Seagrass

Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

2. Identify fish and wildlife resources to be protected
   - Other additional resources
     - Sawfish
     - Bull sharks
     - Selected juvenile fin and shell fish
   - Performance measures for these resources may apply to more than one area or the estuary as a whole



Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

3. Identify performance measures and link to flow target
   - Assess sensitivity of biota to flow and key factors related to flow such as *salinity, light availability and other factors*
     - Tape grass model – integrates variables (light, temperature, salinity) important to growth and sustainability
     - Oyster model – predicts response to salinity
     - Upper estuarine nursery – utilization by larval fish as a function of flow (Florida Gulf Coast University and SFWMD data)

Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

3. Identify performance measures and link to flow target
   - Assess sensitivity of biota to flow and key factors related to flow such as *salinity, light availability and other factors*
   - Reviewed available literature on salinity and site preferences of sawfish in the Caloosahatchee
   - Reviewing literature on the salinity preferences of juvenile bull sharks in the Caloosahatchee
   - Evaluating independent fisheries monitoring data from the Caloosahatchee (Florida Wildlife Research Institute)

Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

3. Identify performance measures and link to flow target
   - Use hydrologic and ecologic models with other information to identify flow target time series
   - Perform evaluations to confirm flow target does not detrimentally affect downstream biota
   - Incorporate return frequency
   - Identify target protective of fish and wildlife

Key Steps to Identify Water for the Protection of Fish and Wildlife (Cont.)

4. Quantify water timing and distribution that contributes to meeting flow target
   - Compare fish and wildlife target to water available from the basin and project
5. Identify quantity of water available to be reserved to protect fish and wildlife

Current Schedule

- Complete Draft Technical Report: Fall 2011
- Conduct Scientific Peer Review: two-month process


Questions?